

WHAT IS CLAIMED IS:

1. A light emitting device comprising:

an insulating base having a plurality of electrical leads including positive and negative leads provided on top and bottom surfaces thereof;

an LED chip array arranged on one of said negative leads on said top surface of said insulating base, said LED chip array being electrically connected to said positive and negative leads on said top surface of said insulating base;

a first metal connection configured to connect said positive leads on said top and bottom surfaces of said insulating base; and

a second metal connection configured to connect said negative leads on said top and bottom surfaces of said insulating base.

2. The light emitting device according to claim 1, wherein:

said LED chip array comprises blue, green and red LED chips,

the positive leads include blue, green and red positive leads arranged at one side of LED chip array,

the negative leads include a first common lead arranged at another side of said LED chip array and a second common lead arranged at said one side of said LED chip array,

said blue LED chip being connected to said blue positive lead and said second common lead by bonding wires,

said green LED chip being connected to said green positive lead and said first common lead by bonding wires, and

said red LED chip being connected to said red positive lead by a bonding wire and to said first common lead by a direct contact with a bottom electrode thereto.

3. The light emitting device according to claim 1, wherein:

said LED chip array comprises blue, green and red LED chips having one arrangement selected from a first arrangement, a second arrangement and a third arrangement,

said first arrangement including a green LED chip, a red LED chip, a blue LED chip, a red LED chip and a green LED chip arranged in order in a predetermined direction,

said second arrangement including a red LED chip, a green LED chip, a blue LED chip, a green LED chip and a red LED chip arranged in order in said predetermined direction, and

said third arrangement including a red LED chip, a blue LED chip, a green LED chip, a blue LED chip and a red LED chip arranged in order in said predetermined direction.

4. A light emitting device comprising:

an insulating base having an upper surface and a lower surface;

a metal layer provided on the upper surface and the lower surface of the insulating base;

a plurality of light emitting elements arranged on the metal layer provided on the upper surface of the insulating base; and

a metal connection that connects the metal layers to each other at a position where at least one of the plurality of light emitting elements is disposed.

5. The light emitting device according to claim 4, wherein:

the metal connection is a through-hole plating.

6. The light emitting device according to claim 5, wherein:

the through-hole plating has a hollow portion filled with metal.

7. The light emitting device according to claim 4, wherein:

the plurality of light emitting elements comprises a first light emitting element configured to emit light at a predetermined heat amount and a second light emitting element configured to emit light at a lower heat amount than the predetermined heat amount, and

the metal connection connects the metal layers to each other at a position where the first light emitting element has been disposed.

8. The light emitting device according to claim 4, wherein:

the plurality of light emitting elements comprises one blue light emitting element, one or more green light emitting elements, and two or more red light emitting elements.

9. The light emitting device according to claim 4, wherein:

the plurality of light emitting elements comprises one blue light emitting element, two green light emitting elements, and two red light emitting elements.

10. A light emitting device comprising:

a substrate comprising a plurality of leads provided on an insulating base;

a plurality of light emitting elements arranged on a base line along a surface of the substrate in a predetermined direction; and

a plurality of bonding wires configured to connect the plurality of light emitting elements to the plurality of leads in the predetermined direction or on one side relative to the base line.

11. The light emitting device according to claim 10, wherein the substrate comprises a reflection case having an opening provided on a side thereof on which the plurality of light emitting elements are arranged and a seal member comprising a light transparent material configured to fill the opening in the reflection case to seal the plurality of light emitting elements in the reflection case, said opening configured to surround the plurality of light emitting elements and extending toward the side where the plurality of bonding wires are provided.

12. The light emitting device according to claim 10, wherein:

the substrate comprises a reflection case having an opening provided on its side where the plurality of light emitting elements are arranged, so as to surround the plurality of light emitting elements and be positioned toward the plurality of bonding wires; and

a seal member comprising a light transparent material filled into the opening in the reflection case which seals the plurality of light emitting elements.

13. The light emitting device according to claim 10, wherein the substrate is a printed circuit board with the plurality of leads provided on the insulating base by a circuit printing method.

14. The light emitting device according to claim 10, wherein the substrate has a lead frame structure formed by placing a lead frame corresponding to the plurality of leads within a mold and pouring an insulating material into the mold.

15. The light emitting device according to claim 10, wherein:

the plurality of light emitting elements comprises one blue light emitting element, one or more green light emitting elements, and two or more red light emitting elements.

16. The light emitting device according to claim 10, wherein:

the plurality of light emitting elements comprises one blue light emitting element, two green light emitting elements, and two red light emitting elements.

17. A light emitting device comprising:

a first metal layer provided on an upper surface of an insulating base;

a second metal layer provided on a lower surface of the insulating base;

a plurality of light emitting elements arranged along a base line on a surface of the first metal layer in a predetermined direction;

a metal connection configured to connect the first and second layers to one another at a position where a predetermined light emitting element of the plurality of light emitting elements is disposed; and

a plurality of bonding wires configured to connect the plurality of light emitting elements to the first metal layer in the predetermined direction or on one side relative to the base line.

18. The light emitting device according to claim 17, wherein the substrate comprises a reflection case having an opening provided on a side thereof on which the plurality of light emitting elements are arranged and a seal member comprising a light transparent material configured to fill the opening in the reflection case to seal the array of light emitting elements in the reflection case, said opening being configured to surround the

plurality of light emitting elements and be positioned eccentrically toward the plurality of bonding elements.

19. The light emitting device according to claim 17, wherein the plurality of light emitting elements comprises one blue light emitting element, one or more green light emitting elements, and two or more red light emitting elements.

20. The light emitting device according to claim 17, wherein the plurality of light emitting elements comprises one blue light emitting element, two green light emitting elements, and two red light emitting elements.

21. A light emitting device for driving a plurality of LED chips disposed in an array to emit a mixed light composed of lights emitted from the plurality of LED chips, said light emitting device comprising:

an LED chip connection lead provided on the upper surface of an insulating base;

a power supply connection lead provided on the lower surface of the insulating base;  
and

a link lead configured to connect the LED chip connection lead to the power supply connection lead between the upper and lower surfaces of the insulating base,

wherein the LED chip connection lead comprises a plurality of separate leads connected respectively to the plurality of LED chips and a common lead connected to the plurality of LED chips by a common connection, the common lead being loaded with the plurality of LED chips and configured to absorb heat generated from the plurality of LED chips.

22. The light emitting device according to claim 21, wherein

the common lead has an elongated region having predetermined width

and length sufficient to be loaded with the plurality of LED chips,

the plurality of LED chips comprise a first plurality of LED chips having positive and negative electrodes on a light emitting face thereof and a second plurality of LED chips having positive and negative electrodes on a light emitting face and a substrate side thereof, and

the first and second pluralities of LED chips are alternately loaded into the elongated region of the common lead.

23. The light emitting device according to claim 22, wherein

the link lead comprises a plurality of through-hole platings configured to connect the common lead to the power supply connection lead at a position adjacent to and below the plurality of first LED chips.

24. The light emitting device according to claim 21, wherein

the link lead comprises a plurality of through-hole platings configured to connect the plurality of separate leads to the power supply connection lead.

25. The light emitting device according to claim 21, wherein

the power supply connection lead comprises a common lead, which is connected to either a power supply or a ground and a plurality of separate leads connected to the other of the ground or the power supply.